Timber Sale Report
&
Appraisal Summary

Blue Duck Salvage Timber Sale

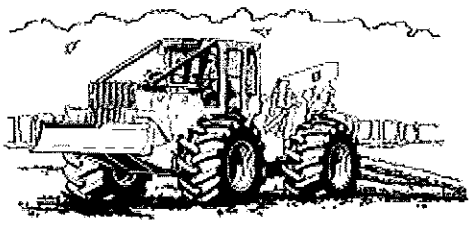
Hahns Peak/Bears Ears Ranger District

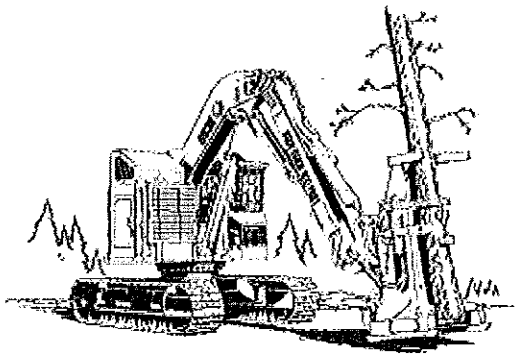
Medicine Bow-Routt National Forests and
Thunder Basin National Grassland

Prepared By (Signature) — Date: 12/8/15

I hereby certify that the requirements of the Secretary's Regulation 36 CFR 223.30 have been met by this timber sale.

District Ranger (Signature) — Date: 12/8/15





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Environmental Coordination and Certification

1. Environmental Assessment (EA): Little Snake North Timber Sale and Fuels Reduction Project authorizes the harvest and removal of timber products in the Blue Duck Salvage Timber Sale. The Decision Notice (DN) was approved on: 12/16/2009 : by Jamie Kingsbury in accordance with the management requirements and constraints identified in the Environmental Assessment and specifically that: (Ref. FSM 2432.04b)

a. Silvicultural treatments were prescribed or reviewed by a certified silviculturist and are appropriate to the management objective of the area.

b. The designation of individual trees and cutting units represents proper application of the silvicultural prescriptions.

c. The selected logging system provides the most economical method of harvesting timber that will accomplish the desired result and produce a quality land management outcome.

d. Measures prescribed for coordination with other resources and the protection of the area have been incorporated in the layout and in the contract where appropriate. Documentation of how the mitigation measures for this sale were incorporated to the field design and contract, as specified in the environmental documentation, are attached to this appraisal.

e. The timber for this sale has been cruised by the procedures and standards in the National Forest Cruising Handbook (FSH 2409.12) and that the cruising meets the sampling error standards of FSH 2409.12, Chapter 41.1. Records of the cruise and check-cruise are on file at the District Office.

f. This National Forest timber sale is consistent with the Forest Plan and the applicable NEPA decision.

2. Silvicultural Prescriptions:

Prepared and Approved By:

Andrew Orlemann	Forester	Date: 04/07/2014
Paul E. Klug	R1 Certified Silviculturist	Date: 04/07/2014

DESCRIPTION OF SALE:

All referenced documentation, plans, spreadsheets, information and data processed can be found at the HPBE district office in the sale file or in the corporate database at:

O:\NFS\MBRTB\Program\2400TimberMgmt\2430CommercialTimberSales\HPBE\Blue Duck TS

The Blue Duck Salvage Sale, STARS# 25302 is located on the Hahns Peak/Bears Ears Ranger District of the Medicine Bow-Routt National Forests in Routt County, Colorado. The sale is approximately 37 miles north of Steamboat Spring, CO along National Forest System Road (NFSR) 500.1 and 550.1.

The legal description is: T11N, R85W, Sections 3, 4, 8, 9, 10, 13, 14, 15, 16, 22, 23, 24, 26 and 27; 6th P.M., surveyed, Routt County, Colorado. Gross sale area boundary is 3004 acres harvest acres is 320.96. Unit of measure for the sale is hundred cubic feet (CCF). Total Net live and dead sawtimber is 10,466.93 CCF.

There are a total of 35 harvest units to be treated. Silvicultural prescriptions for all units include:

- Rx1 - Clearcut with Reserves
- Rx1a - Clearcut with Reserves and Removal of Fir
- Rx2 - Salvage Cutting
- Rx3 - Coppice Clearfelling with Reserves

The sale has road reconstruction package included in the contract. A required 6.26 miles of road reconstruction is needed to access units.

LAYOUT & DESIGNATION

See marking guides for specifics of all marking within the sale.
All units and marking tracer paint was completed in the fall of 2014.
All boundaries, leave trees and reserve trees are marked with Orange paint batch XO191.
All individually marked (ITM) cut trees are marked with Blue paint batch X0159.
Plot Cruise trees were marked with Green paint batch XO469.
Corrections were made with Black paint batch CO245.

Table 1	Sale/Unit Overview			
Designation	**Acres**	**Units**	**Volume**	**Volume/ Acre**
CC (B2.31)	75.79	13,14,15,21,23,24,27,29	3271.66	43.17
DxLP8"min (C2.3521#)	109.82	1,3,4,5,7,8,9,10,11,12,17,19,31,34,35	2945.84	26.82
DxLP8"minITM (C2.3521#)	118.54	2,6,18,20,26,28,30,32,33	3523.79	29.73
LTM (C2.356#)	16.81	16,22,25	725.64	43.17
Totals	**320.96**		**10466.93**	**32.6**

CRUISE

Cruise design and implementation has been completed pursuant with FSH 2409.12 Timber Cruising Handbook. Cruise specifics can be found in the cruise plan and output files. In general, the sale volume was determined from variable plot and sample tree cruise methodologies.

The weighted standard error for net volume cruised is: +/-18.93%
Cruise designed by: Craig Kasten Date: 10/28/2014
Cruise completed date: 08/05/2014
Successful check cruise by: Christie Schneider Date check cruise: 05/26/2015
Cruise output certification by: Chad Stewart Date: 12/12/2014

All appraisal calculations and allowances are based on actual cruise volume. Rounding for TIM and TEA needs will occur and is displayed in the TEA Input and Summary of Recommendations sections.

Table 2	Cruising Team	
Members	**Type of Certification**	**Expiration Date**
Jeff Hartling, Matt Piscopo	Qualified	Indefinite
Craig Kasten	Advanced	Indefinite

VOLUMES

Average Quadratic Mean Diameter for the sale is 11.3 inches and the mean total height is 71.0 feet. For a further breakdown of tree defect, please see the cruise reports which display defect by strata, live or dead, and species.

Table 3	Cutting Unit Information			
Unit #	**Silvicutural Prescription**	**Final Designation**	**Acres**	**Volume**
1	Rx1	DxLP, 8" Min	5.76	144.71
2	Rx2	DxLP, 8" Min, ITM	29.39	770.34
3	Rx1	DxLP, 8" Min	7.21	209.95
4	Rx1	DxLP, 8" Min	1.33	33.42
5	Rx1a	DxLP, 8" Min	12.36	359.92
6	Rx1/RX1a	DxLP, 8" Min, ITM	24.79	734.80
7	Rx1/Rx1a	DxLP, 8" Min	12.55	315.31
8	Rx1	DxLP, 8" Min	6.17	179.67
9	Rx3/Rx1	DxLP, 8" Min	5.5	138.18
10	Rx1	DxLP, 8" Min	13.24	332.64
11	Rx1	DxLP, 8" Min	5.34	155.50
12	Rx1a	DxLP, 8" Min	12.57	315.81
13	Rx1	Clearcut	9.78	422.18
14	Rx1	Clearcut	2.6	112.23
15	Rx1	Clearcut	18.99	819.75
16	Rx1	LTM	3.04	131.23
17	Rx1a	DxLP, 8" Min	7.95	231.50
18	Rx1	DxLP, 8" Min, ITM	11.83	300.04
19	Rx1	DxLP, 8" Min	2.95	85.90
20	Rx1a	DxLP, 8" Min, ITM	8.71	272.10
21	Rx1	Clearcut	21.93	946.66
22	Rx1a	LTM	10.01	432.10
23	Rx1a	Clearcut	12.05	520.17
24	Rx1a	Clearcut	3.74	161.45
25	Rx1a/Rx1	LTM	3.76	162.31
26	Rx3	DxLP, 8" Min, ITM	17.45	570.04
27	Rx1a/Rx1	Clearcut	1.99	85.90
28	Rx1a/Rx1	DxLP, 8" Min, ITM	0.94	33.03
29	Rx1	Clearcut	4.71	203.32
30	Rx1a	DxLP, 8" Min, ITM	13.25	416.14
31	Rx1a	DxLP, 8" Min	7.71	193.71
32	Rx1	DxLP, 8" Min, ITM	9.14	304.56
33	Rx1	DxLP, 8" Min, ITM	3.04	122.74
34	Rx1	DxLP, 8" Min	4.75	138.32
35	Rx1	DxLP, 8" Min	4.43	111.30
Totals			**320.96**	**10466.93**

Table 4 Cruised Volume by Species, Live and Dead Sawtimber		
Species	**Live**	**Dead**
Lodgepole Pine	1696.06	7624.12
Engelmann Spruce	5.08	806.04
Subalpine Fir	335.63	0
Total All = 10,466.93		

Table 5 Volume and Utilization Standards							
Contract Species	**Product**	**Volume**	**DBH**	**# pieces**	**Length**	**DIB**	**Merch Factor**
Lodgepole Pine and Subalpine Fir	Sawtimber	9655.81	7.0	1	8	6	10.67
Engelmann Spruce	Sawtimber	811.12	7.0	1	8	6	10.67

ROAD PACKAGE

See road package for full road reconstruction and closure details.

Road reconstruction of 6.26 miles will be required.

Table 6 Road Reconstruction Information						
Road	**Reconstruction Length**	**Survey**	**Design**	**Stake**	**Cost $**	**Completion Date**
500.1E	1.01	FS	FS	FS-BC	2,048.95	N/A
500.1F	.84	FS	FS	FS-BC	2980.80	N/A
500.1I	0.05	FS	FS	FS-BC	5,050.00	N/A
502.1A	0.40	FS	FS	FS-BC	3,807.00	N/A
504.1	0.41	FS	FS	FS-BC	2,305.55	N/A
504.1A	0.46	FS	FS	FS-BC	1,416.80	N/A
550.1A	0.42	FS	FS	FS-BC	2,455.90	N/A
550.1B	0.88	FS	FS	FS-BC	3,662.40	N/A
550.1D	0.08	FS	FS	FS-BC	1,499.60	N/A
550.1G	0.21	FS	FS	FS-BC	2,026.80	N/A
553.1	1.50	FS	FS	FS-BC	7,302.50	N/A
Total					**$34,556.30**	

FS=Forest Service, BC=Before Clearing

Road closure post haul as per C5.41# will be required on 4 roads.

Table 7 Road Closure Information (C5.41#)					
Road	**Decommission Length**	**Design**	**C5.41# Designs**	**Cost $**	**Completion Date**
502.1A	.40	FS	Oblit	626.45	N/A
504.1A	.46	FS	Oblit	720.42	N/A
550.1G	0.21	FS	Oblit	328.89	N/A
553.1	.1	FS	Log Barricade	253.28	N/A
Total				**$1,929.04**	

Total Road Cost input for TEA 2400-17 includes the sum of Specified Road Reconstruction (38,051.30), Deposit for Engineering Services($0.00) and if applicable C5.41 Road Closure (1,929.04) estimate and will be rounded: **$36,495.34**

LOG HAUL AND ROAD MAINTENANCE

The appraisal point with the highest appraised value was determined to be the mill facility in Saratoga, Wyoming.

Log Haul Cost:
Log Haul spreadsheet was used to calculate the haul cost for sawtimber = **$30.84.**

Road Maintenance:
Road Maintenance tables below display what roads the Purchaser will maintain and if applicable the roads he will pay a deposit to the Forest Service to maintain.

Table 8 **Prehaul Maintenance Table**

	Termini			Applicable Prehaul Road Maintenance Specifications									
Road	From	To	Miles	T800	T801	T802	T803	T804	T805	T806	T807	T808	
503.1	0.00	0.25	0.25			P	P						

P = Purchaser Performance Item, D = Deposit to Forest Service, D3 = Deposit to Third Party

Table 9 **During Haul & Post Haul Maintenance Table**

	Termini			Applicable During Haul & Post Haul Road Maintenance Specifications									
Road	From	To	Miles	T800	T801	T802	T803	T804	T805	T806	T807	T808	
500.1	0.00	4.23	4.23		P	P	P	P	P		P		
500.1E	0.00	1.01	1.01		P	P	P	P	P		P	P	
500.1F	0.00	0.84	0.84		P	P	P	P	P		P	P	
500.1I	0.00	0.05	0.05		P	P	P	P	P		P		
502.1A	0.00	0.40	0.40		P	P	P	P	P		P		
503.1	0.00	0.25	0.25		P	P	P	P	P		P		
504.1	0.00	0.41	0.41		P	P	P	P	P		P		
504.1A	0.00	0.46	0.46		P	P	P	P	P		P	P	
550.1	0.00	11.7	11.7		P	P	P	P	P		P	P	
550	0.00	25.4	25.4		P	P	P	P	P		P	P	
550.1A	0.00	0.42	0.42		P	P	P	P	P		P	P	
550.1B	0.00	0.88	0.88		P	P	P	P	P		P		
550.1D	0.00	0.08	0.08		P	P	P	P	P		P		
550.1G	0.00	0.21	0.21		P	P	P	P	P		P		
553.1	0.00	1.50	1.50		P	P	P	P	P		P		

P = Purchaser Performance Item, D = Deposit to Forest Service, D3 = Deposit to Third Party

Pre-Haul Road Maintenance:
A Pre-haul Maintenance spreadsheet was utilized to determine costs which is =
$70.00 / 10,466.93 ccf = $0.01

During & Post-Haul Road Maintenance:
During & Post Haul Maintenance spreadsheet was utilized to determine cost which is =
$32,552.37 / 10,466.93 ccf = $3.11

Surface Rock Replacement Deposit:
Surface Rock Replacement deposit spreadsheet was utilized to determine cost which is = **75,571.74 / 10,466.93 ccf = $7.22**

Road maintenance is a sum of pre-haul, during & post haul maintenance, and surface rock replacement deposit = ***10.34/CCF***

TEMPORARY ROAD COST

Temporary Road Narrative
An estimated 4.29 miles of new temporary road is needed to access this sale. The Purchaser will close all miles of temporary roads as described in C5.34# generally by re-contouring to natural topography, scattering coarse woody debris, water barring, ripping to described depths and seeded or variations of these techniques. Costs for this work and the variance in this work by road has been fully calculated using the Cost Estimating Guide for Road Construction, March 2013 combined with an internally developed temporary road cost calculation spreadsheet.

Unless otherwise agreed to by both the Forest Service and the Purchaser right-of-way (ROW) slash from temporary roads will be treated as follows: ROW timber not meeting utilization standards of contract provision A2, to include but not limited too stumps, limbs and tops shall be scattered outside the clearing limits and lopped and scattered to lie within 24 inches of the ground. Windrowing is acceptable, so it can be pulled back onto the roadway as part of closure if needed.

Temporary Road Cost Calculation Spreadsheet Narrative
The top portion of the cost calculation spreadsheet lists all temporary road segments. These segments are broken down into the length in feet by cross slope. The upper right portion of the sheet depicts the dollar amount for each work item by road. Clearing and grubbing costs are calculated in the boxes with the blue heading. Excavation cost are calculated in boxes with the orange heading, closure in red, seeding in green and temporary gates in yellow.

1 Temp Road Clearing and Grubbing: The costs per unit are calculated using an excavator, 2 sawyers, and one crew rig. The amount of clearing was broken three CCF per acre ranges. The estimated CCF per acre of clearing was determined to be approximately 7 CCF. At 7 CCF per acre the clearing work would take about 7 hours to complete. The cost of $888.70 per acre will be expanded by acreage determined by cross slope. A portion of the clearing is determined to be merchantable and the cost to yard this material was removed from the total cost of clearing. The total cost of clearing and grubbing is **$4,060.65**

2 Temp Road Excavation: The cost per unit is calculated using a D6 dozer capable of moving 80 cubic yards per hour. The cost per cubic yard is $1.80. This amount is expanded by an average cubic yard per cross slope. The total cost of excavation is **$10,167.52.**

3 Temp Road Closure: Closure cost were determined using a D6 and excavator working together to re-contour a road back to natural topography. The cost per hour remains static, but the production rate changes by cross slope. The calculated hourly rate is $249.37. Temp roads or portions of temp roads that have little cross slope and cannot be recountoured will be closed by rip and water bar only, the same hourly rate is used as the cross slope production rate calculation adjusts adequately for this. The total cost of closure is **$13,468.31.**

4 Temp Road Seeding: Seeding cost were determined using 25 pounds of seed per acre, one laborer, and a pickup, at a production rate of one acre per 1.5 hours. The seed cost were determined to average $8 per pound. The calculated cost per acre for seeding is $265.74. This cost is expanded by acres per cross slope. The total cost of seeding is **$2,018.70.**

5 Temporary Gates: 1 temporary gate will be needed to keep NFSR 553.1 closed during harvest and is included in temp road estimate as per appraisal guidance at an estimated material and labor cost of **$603.07.**

Subtotal:

1.	$4060.65
2.	$10167.52
3.	$13468.31
4.	$2018.70
5.	$603.07
Subtotal	**$30,318.25**

6 Mobilization and Consumer Price Index (CPI) adjustment:
Mobilization is 9% of total work.
Total after mobilization: $30,318.25 x 1.09 = $33,046.89
CPI 3% per year for 3 years since 2013 cost estimating guide or 9%.
Total after CPI: 33,046.89 x 1.09 = 36,021.11

Temporary Roads = $36,021.11 / 10466.93 = **$3.44/CCF**

EROSION CONTROL

There are an estimated 57 landings needed to log this sale and these landings will need to be seeded with grass after use. There are an estimated 5 percent of the harvest acres in skid trails that will need to be grass seeded. Landings are estimated to be approximately 0.25 acres. Estimated cost of grass seeding w/o fertilizer per acre, labor included. = $265.74. The cost for this work will be added to temporary roads, as this is part of the temporary transportation system.

57 landings x .25acres = 14.25 acres
Harvest acres 320.96 x 0.05 = 16.05 skid trail acres
Landing acres 14.25 + Skid trail acres 16.05 = 30.30 acres
30.30 X $265.74 = $8,051.92

Erosion Control = $8,051.92 / 10466.93 CCF = **$0.77/CCF**

BRUSH DISPOSAL / SLASH TREATMENT

Whole tree skidding is preferred for all units except in those units required to leave limbs and tops at point of felling, residual slash greater than 24 inches in depth will be scattered, bucked or trampled to lie within 24 inches of the ground. Slash created at the landing will be piled; this is considered normal industry practice and is included in skid yard costs. Logging slash piles will be burnt by the Forest Service and requires a deposit. The cost to burn piles by Forest Service is detailed in the Brush Disposal Plan.

Brush Disposal Deposit: $18,087.00 / 10466.93 CCF =**$1.73/CCF**

SALE SKID YARD

A spread sheet was developed to determine average skid distance for the sale. The skid yard spreadsheet uses average skid distance and volume per unit to determine a weighted average skid distance. The sale skid yard cost was determined using the regional average regression equations in the TEA program.

Average Skid Distance = **330 Feet**
The sale skid/yard cost = **$100.53**

PURCHASER OBLIGATION PER OPERATION FIRE

1. The normal amount of men required for operation of the sale = 3 personnel.
2. Maximum amount of purchaser obligation per operations fire = number of personnel x semiskilled firefighter wage rate x 12 hrs. x 3 days.
3. 3 men x 12 hr. shift x $17.60/hr. (AD-C firefighter, Interagency Incident Business Management Handbook) x 3 days = $1900.80 rounded to nearest $100 = $1900
4. Use **$1,900.00**

KV PLAN

Specifics of the sale area improvement plan are detailed in the KV Plan.
Essential KV includes Program Support: **$57,443.00**

SSF PLAN

The amount of available funds for the SSF Plan is determined from total sale value minus planned KV collection minus minimum to NFF if applicable (not applicable to salvage sales).
Total Sale Collection Limit/Available Funds: **$0.00**
Total funded with consideration of 63% overhead (OH): = **$0.00**

ADJUSTMENTS

Quality Unusual Adjustment – Haul Adjustment
Per new Bulletin BU211015, Zone 1 Haul Distance Adjustment entered as a quality adjustment;
(Base Haul Cost – Sale Haul Cost) x 0.5 = haul adjustment.
LP (31.34 - 30.84) x 0.5 = **-$0.25/CCF**
ES (33.10 - 30.84) x 0.5 = **-$1.13/CCF**

TEA Inputs

Table 10	Volume - A2, Live & Dead Sawtimber Rounded as required by TIM
Species	**Live & Dead**
Engelmann Spruce	811
Lodgepole Pine & Subalpine Fir	9,655
Total = 10,466 CCF	

Table 11		Information Input to TEA234			
STARS #	*Bulletin*	*State*	*County*	*Sale Area Acres*	*Harvest Acres*
25302	BU211015	CO	Routt	3004	320.96 rounded 321
Legal Description			*Construction Miles*		*Reconstruction Miles*
T11N R85W			0.00 rounded to 0.0		6.26 rounded to 6.3
Specified Road Cost 1/		*Contributing Funds*			*Sale QMD*
$36,495.34 rounded 36,495		$0.00			11.3
Appraisal Base Period		*Planned KV (SAB)*			*Essential KV*
October 30, 15		$57,443			$57,443
Appraisal Point Sawtimber		*Haul Miles*			*Round Trip Time*
Saratoga, CO		59.76 rounded 60			272.96 rounded 273
Haul Cost	*Road Maintenance 2/*		*Sale Slash 3/*		*Sale Temp Road 4/*
$30.84	$10.34		$1.73		$4.21
Unit of Measure (UOM)		*Product*		*Timber Property*	
03 (CCF) (ES) (LP)		01 (Sawtimber)		$0.00	
Quality Adjustment LP	*Quality Adjustment ES*	*Unusual Adjustment LP*		*Unusual Adjustment ES*	
-$0.25	-$1.13	-		-	
Ground Based Volume CCF	*Ground Based Vol/acre CCF*	*Ground Based Vol/tree CF*		*Ground Based Skid Distance Feet*	
10,466	32.61 rounded 32.6	15.3 rounded 15		330	

1/ Specified road cost is a sum of construction ($0.00) and reconstruction ($34,566.30) and reconstruction engineering deposits ($0.00) and C5.41# Road Closure ($1,929.04) total dollars.
2/ Road maintenance is a sum of pre-haul ($0.01), during & post haul maintenance ($3.11), and surface rock replacement deposit ($7.22) per CCF.
3/ Sale slash is a sum of brush disposal ($1.73) and slash treatment ($0.00) per CCF.
4/ Sale temp roads is a sum of temp roads ($3.44) and Erosion control ($0.77) per CCF

SUMMARY OF RECOMMENDATIONS & GENERAL CONTRACT INFORMATION

A. Bulletin: **BU211015**
B. Escalation: **Flat**
C. Scaled or Tree Measurement: **Sales by Weight**
D. Reconstruct Specified Roads Present: **Yes**
E. Value of Sale: weighted average bid value = Dependent on TIM or TEA rounding
F. Contract Type: **2400-6**
G. Advertised: **12/12/2015** Bid Opening: **1/11/2016** Termination: **09/30/2018**
H. Bid Method: **Sealed Bid** Bid Form: **Weighted Average Bid**
I. Periodic Payment Initial: **TBD** Additional: **TBD**
J. Performance Bond: **$7000.00**
K. Appraisal Method: **Transaction Evidence**
L. Normal Operating Season: **June 15 to October 15**
M. Fire Precautionary Period: **May 1 to November 15**
N. Required Deposits:
   1. Slash Treatment Deposit (BD Plan): **$1.73**
   2. Surface Rock Replacement Deposit: **$7.22/CCF**
   3. Engineering Services Deposit: **$0.00**

Table 12 **Summary of Recommendations**

	Lodgepole Pine and Subalpine fir Sawtimber	Engelmann Spruce Sawtimber	Non-saw	TOTAL/ AVERAGE
Estimated Volume CCF	9655	811	-	10466
Advertised Rate (Per CCF)	5.58	7.58	-	TEA =5.74 TIM=5.73
Base Rates (Per CCF)	5.58	7.58		TEA =5.74 TIM =5.73
Value of Sale	$53,874.90	$6,147.38	-	WA TEA =60,074.84 WA TIM =59,970.18
Required Deposits:				
Slash Disposal (BD) (18 U.S.C. 490)	$1.73	$1.73	-	$1.77
Surface Replacement (SRR) (16 U.S.C. 537)	$7.22	$7.22	-	$7.22
Blade Maint.	-	-	-	-
Engineering Services	-	-	-	-
Purchaser Road Costs				
During & Post Maint.	$3.11	$3.11	-	3.11
Road Reconstruction	-	-	-	$34,566.30
Road Closure	-	-	-	1929.03
Pre-Haul Maint	$0.01	$0.01	-	$0.01
Temp Roads	$4.21	$4.21	-	$4.21
WWPA Base Index	190.88 WWPAD	174.28 WWPAC	-	-
QMD	LP 9.1 DLP 11.7	ES 13.4 ESD 19.2	-	11.3